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Conflict Resolution Satisfaction and IS Program Effectiveness: Constructive Controversy Theory

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ABSTRACT

Conflict occurrence during information systems (IS) development/implementation is an unavoidable phenomenon. Conflict strains interactions and trust, leads to further conflict, and has a negative effect on system implementation success. Therefore, resolving conflict that arises during the IS implementation process has been a crucial issue for decades. Unfortunately, the existing empirical evidences were not consistent with this conventional wisdom and lacking of a theoretical explanation. We argue that the integrative conflict management is an effective mechanism for conflict resolution under the multi-project system development context. We construct a model using controversy conflict theory in order to explain the effect of conflict resolution on IT projects implementation effectiveness. We test the model using data from 183 large-scale IT implementation projects. Our model and findings support our theory that integrative conflict management supports effective conflict resolution and program outcomes.

Keywords

Program, conflict, resolution, constructive controversy.

INTRODUCTION

User participation and involvement is a critical activity for the information system development (ISD) success (McKeen et al., 1994; Wang et al., 2006). It also creates unavoidable conflict among stakeholders due to different backgrounds and needs (Robey et al., 1989; Hartwick and Barki, 1994; Barki and Hartwick, 2001; Liang et al., 2010, 2012) and this unresolved conflict often has negative impacts on team performance and project performance (Robey et al., 1993; Sawyer, 2001; Liu et al., 2009). As a result, successfully managing conflict during the ISD process has long been suggested as one of the most critical issues in IS project implementation (Hartwick et al., 1994; Robey et al., 1993, 1989; Robey and Farrow, 1982).

Two streams of conflict management have been pursued in past research. One stream has suggested that conflict resolution satisfaction is the key factor explaining the relationship between conflict, conflict resolution and overall project performance (Robey et al., 1989; Hartwick et al., 1994; Barki et al., 2001). A goal of conflict management is to reach satisfactory conflict resolution among stakeholders, thereby avoiding negative impacts of conflict. Empirical evidence has shown only weak support for this assertion (Barki et al., 2001); however, empirical evidence has revealed a significant relationship between the style of conflict management and project outcomes (Barki et al., 2001; Robey et al., 1993). Specifically, integrative conflict management, which attempts to maximize the aggregate outcomes of conflicting parties and to create the largest collective reward (Janssen et al., 1999; Johnson and Johnson, 1979; Lax, 1987), was the most effective conflict resolution mechanism among the other conflict management styles (e.g. compromising, asserting, avoiding, accommodating). Other IS research, however, has focused on identifying the match between the type of conflict and conflict management style (Sawyer, 2001; Kankanhalli et al., 2007; Chou and Yeh, 2007). Empirical evidence has consistently shown that an integrative conflict management style was the most effective conflict resolution mechanism for resolving task-related conflicts during ISD processes (Jiang et al., 2013; Kankanhalli et al., 2007; Chou et al., 2007).

Both streams of literature are converging to the same principal outcome: that integrative conflict management could be adopted for resolving task-related conflicts occurred during ISD processes. However, empirical studies have not confirmed whether conflict resolution satisfaction is an effective mediator between conflict and project performance. At least two shortcomings are evident in existing studies. First, studies conducted in other disciplines have suggested that cooperation and mutual coordination behaviors are the two most important concepts for explaining the relationship between satisfactory conflict resolution and final team outcomes (Simons and Peterson, 2000). However, the impact of satisfactory conflict resolution on teamwork has been overlooked in the IS conflict literature. This link may yield empirical support for the relationship between satisfactory conflict resolution, team performance and project outcomes. Second, the relationship between conflict management mechanisms and project performance has lacked a theoretical explanation. How do conflict management mechanisms directly impact project performance, in addition to the impact through satisfactory conflict resolution? Social psychology theorists have argued that constructive controversy conflict management can enhance collaboration among team members. Given the central role that conflict management researchers ascribe to interference, explaining the effect of conflict on project and project team performance without understanding the effect on teamwork processes seems to be a serious omission.

The main objective of this study is, therefore, to examine whether conflict resolution satisfaction is a significant mediator between conflict and project outcomes, by incorporating teamwork process variables as explanatory factors. Based on conflict management theory, we propose that trust, mutual support, and cooperation are the consequences of satisfactory conflict resolution (Tjosvold, 1998; Simons et al., 2000; Guerra et al., 2005) which, in turn, enhance final project outcomes (Pinto et al., 1993; Hoegl et al., 2004). Furthermore, we argue that the effect of integrative conflict management on project performance will be mediated by these teamwork process variables.

RESEARCH BACKGROUND

Conflict is the awareness of discrepancies in opinions, incompatible wishes, or irreconcilable desires among parties involved in a relationship (Boulding, 1963). Conflict has been found to be multidimensional (Jehn, 1995), and researchers distinguish between relationship conflict and task conflict. Relationship conflict refers to tension, animosity, and annoyance among members within a group. Task conflict is the disagreement among the group members' idea and opinions about the task being performed. Relationship conflict has been found to be detrimental to group performance, while task conflict can be beneficial to team effectiveness when the conflict is satisfactorily resolved (Jehn, 1995; Simons et al., 2000).

Unresolved conflict can strain relationships and trust between parties. It could lead to the development of further conflict, and has a strong, negative effect on overall software product success and customer satisfaction (Deutsch, 1990). Therefore, satisfactory conflict resolution represents a key issue in successful management and implementation of ISD projects (Behfar et al., 2008). Satisfactory conflict resolution reflects positive residual outcomes and behaviors at the closure of a conflict episode (Barki et al., 2001; Karau and Williams, 1993). The positive relationship outcomes are often defined in terms of positive perceptions of overall satisfaction, positive perceptions of overall cooperation, supportive behaviors, increased decision autonomy, and higher perception of relationship quality (Janssen et al., 1999; Locke and Latham, 2002; Wall et al., 1986).

Conflict management refers to the strategies implemented by group members to reduce or solve conflict (Jehn and Mannix, 2001; Van de Vliert, 1997). Based on Pruitt and Rubin (1986)'s dual concern theory, five conflict management styles have been observed including: asserting, accommodating, compromising, avoiding, and collaborative/integrative (Barki et al., 2001; Volkema and Bergmann, 1995; Thomas and Pondy, 1977). These conflict management styles vary depending on the concern for the self and concern for others (Pruitt, 1983). Literature shows that the conflict management strategy has direct impacts on group performance: approaches based on compromise (e.g. matching others' concessions) and integrative conflict management (e.g. high concern for self and others) have been observed as effective for resolving IS development conflict (Chou et al., 2007).

Antecedents of conflict relate to the characteristics of team members, teams, projects, and organizations (Hinds and Bailey, 2003). Robey, et al. (1989) and Barki and Hartwick (1994) highlight how individual participation and influence affecting conflicts, its resolution and project performance. Constant et al. (1994) describe how resource sharing affects the way software developers work together. More recently, Jiang et al. (2013) found that the diversity of members' knowledge background affects the levels of conflict experienced by IS team members. Conflict

resolution management examines how conflict management strategy/behavior impacts the relationship between conflict and team performance.

The major theme in prior literature is that satisfactory conflict resolution mediates conflict and team performance (Hartwick et al., 1994; Robey et al., 1989, 1993; Barki et al., 2001) and ample research has observed a direct effect of conflict management strategy on satisfactory conflict resolution (Wall and Nolan, 1986; Rahim, 2002) as well as team performance (Chou et al., 2007). The prevailing suggested conflict resolution model is shown in Figure 1. Unfortunately, empirical support for the relationship between satisfactory conflict resolution and team performance has been weak. The focus of this study is to further examine this issue.

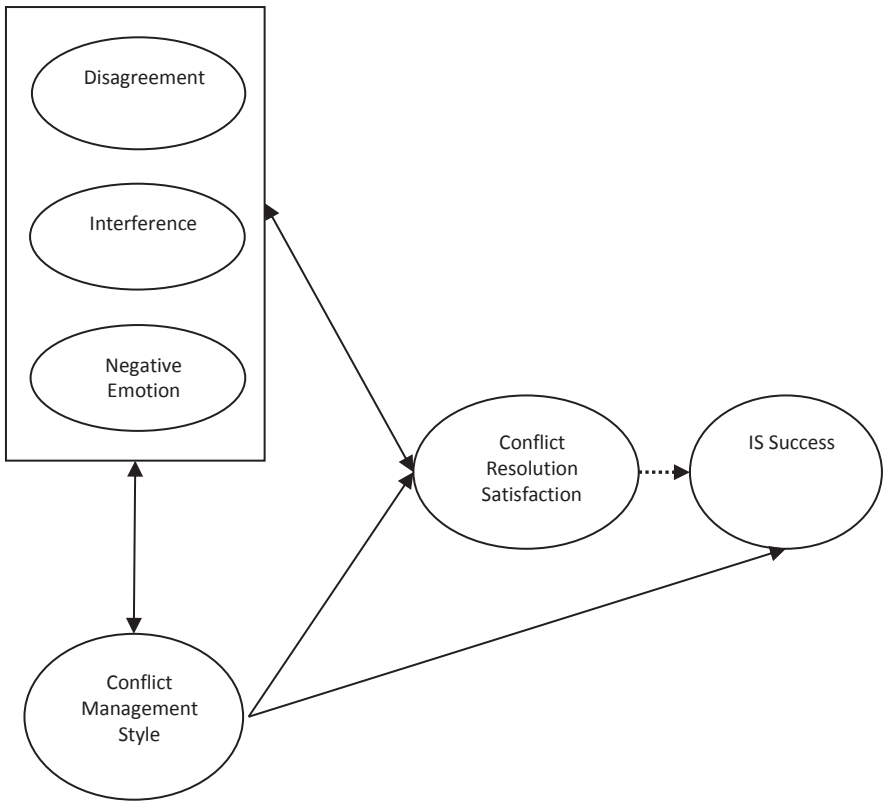

Figure 1 Conflict and Conflict Management Model (Hartwick et al., 1994)

To understand the theoretical underpinnings of conflict management and resolution outcomes in IS development projects, it is first important to understand the conceptualization of conflict in the ISD setting. Barki and Hartwick (2001) identified four components of conflict in the IS environment: interdependence, disagreement, interference and negative emotion. Collectively, these properties span situational (interdependence), cognitive (disagreement), behavioral (interference), and affective (negative emotion) elements of conflict situations. Interdependence is present when individuals share common resources and/or each individual's outcomes are affected by the actions of others, a common characteristic of the IT multi-project setting (Hsu et al., 2011). In the absence of interdependence, the actions of one group have no effect on the outcomes of another group. Even though teams may be in interdependent relationships with others, not all teams will face conflict (Janssen et al., 1999; Jehn et al., 2001). Hence, interdependence is an essential situational element, but not a sufficient condition for conflict to affect final outcomes.

Disagreement can occur when groups have dissimilar objectives. Even though individuals or teams may be in disagreement with others, not all will face conflict when the areas of disagreement are irrelevant, minor or unimportant. Hence, disagreement is an essential cognitive element, but not a sufficient condition for conflict to manifest. The disagreement should relate to critical tasks or goal-related issues. Interference occurs when a group interferes with or opposes another's attainment of its outcomes or goals. Interference represents a key behavioral

element of any conflict between groups, undermining smooth resource allocation across project teams. Negative emotions emerge in conflict when there are major disagreements, or when parties interfere with the attainment of each other's goals. Elimination of negative emotions, like jealousy, anger, anxiety, in favor of positive attitudes is an expected consequence of conflict resolution. Hence, interference and negative emotion are actually consequences of the unresolved conflicts among members or groups.

Accordingly, we expect that satisfactory conflict resolution will tangibly reduce subsequent negative attitudes and behaviors among program team members. However, the mechanism of action that translates these teamwork behaviors into satisfactory conflict resolution outcomes remains unexplained. Resolving conflict on its own does not necessarily lead to mutual support and cooperation between team members, because residual effects of the conflict itself may persist. Unfortunately, the IS literature has overlooked these potentially important teamwork process factors in seeking to explain the ISD conflict management phenomenon.

CONSTRUCTIVE CONTROVERSY THEORY

The theory of constructive controversy was proposed by Johnson and Johnson (1979) as an effective guide to resolve conflicts and to increase the quality of decision making. Constructive controversy theory was originally developed based on Deutsch's social interdependence theory (Deutsch, 1977) and cognitive development theories (Piaget, 1976). It involves what Aristotle called 'deliberate discourse', wherein participants thoroughly discuss the advantages and disadvantages of proposed actions, in order to synthesize novel solutions (Johnson, 2008). Different from other conflict management methods like dominating (Rahim, 2002), distributing (Miranda and Bostrom, 1993) or avoiding (Barki et al., 2001), constructive controversy aims to provide not just a solution to the conflict, but also to reach a better conclusion that satisfies every party who joins the conflict to reach consensus with each other (Johnson, 2008; Johnson et al., 1979; Tjosvold, 2008; Johnson, Johnson, and Smith, 2000). To implement constructive controversy, people in conflict are gathered to discuss their sentiments and derive positive outcomes, using processes such as reconceptualization, perspective-taking, creative decision-making, and curiosity-building (Johnson, Johnson, and Smith, 2000; Johnson, 2008; Johnson et al., 1979; Alper et al., 1998; Deutsch et al., 2011).

Constructive controversy is often compared to concurrence seeking, debate and individualistic decisions (Deutsch et al., 2011; Johnson, Johnson, and Smith, 2000; Johnson, 2008). In concurrence seeking, group members constrain discussions to avoid argument and promote realistic appraisal of alternative ideas and courses of action. Debate occurs when two or more individuals discuss compatible positions: a judge declares a winner on the basis of who presents the best position. Individualistic decisions exist when individuals consider the issue alone while perceiving their goals to be unrelated to those of others. Jiang, et al. (2013) has shown that constructive controversy efforts made by counterparts (e.g. trying hard to seek an agreement toward those incompatibilities of opinions, ideas, theories and conclusions among each other) would positively impact coordination among project teams. In the structure of cooperation, team members believe that their goal achievements are positively correlated, only if the other members reach their goals and they can reach their own goals (Tichy et al., 2010). Individuals in cooperation recognize that they want each other to pursue their goals effectively (Alper et al., 1998). Individuals in competition believe that their goal achievements are negatively correlated: other members reaching their goals will prohibit the individual achieving their own goal (Alper et al., 1998; Tichy et al., 2010). Individuals with perceived competitive goal interdependence conclude that they are better off when others act ineffectively (Alper et al., 1998). Therefore, in the structure of cooperation, team members are more likely to work for mutual benefit than competitively, because they understand that others' goal attainment helps them; and they can be successful together (Lewicki et al., 1998; Tichy et al., 2010).

Based on the above discussion, we propose a research model in Figure 2. Integrative conflict management should lead to positive group outcomes by maximizing the total outcomes of conflicting parties as well as to create the largest value of the collective reward at stake (Janssen et al., 1999; Johnson et al., 1979; Lax, 1987). In particular, we argue that integrative conflict management would not only an effective mechanism for conflict resolution satisfaction as suggested in the existing literature but also directly impact team members' mutual support and cooperation behaviors. Furthermore, based on the conflict management literature, the relationship between conflict resolution satisfaction and teamwork variables (i.e., trust, mutual support, and cooperation) were examined in this study. Importantly, the trust, mutual support, and cooperation are proposed in this study as full mediators of the effects of both conflict resolution satisfaction and integrative conflict management on final project performance.

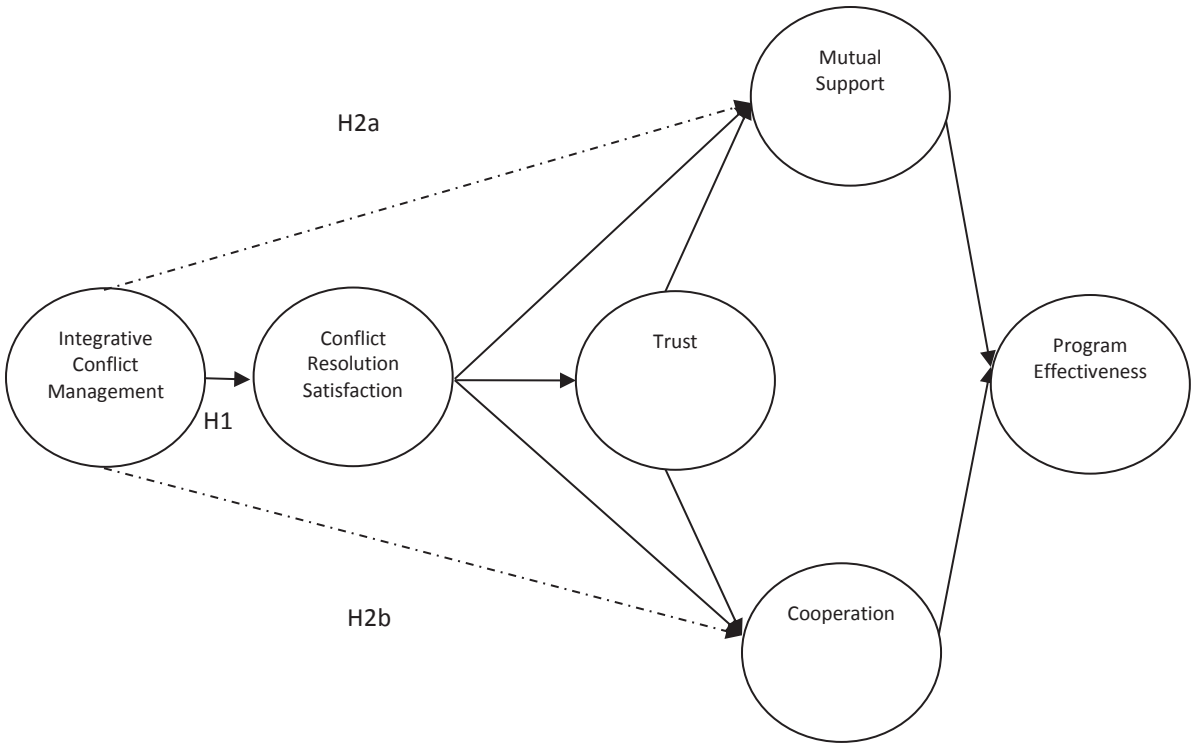

Figure 2 Research Model of Integrative Conflict Management

HYPOTHESES

Integrative Conflict Management and Conflict Resolution Satisfaction

Integrative conflict management techniques aim to reconcile participants' divergent interests, where all parties are encouraged to view the conflict as an opportunity to include all parties' needs in order to deliver the best possible outcome (Kuhn and Poole, 2000; Carnevale and Isen, 1986). Under this model, parties in conflict feel that their concerns are heard and acknowledged by the other party. This approach to conflict resolution is characterized by greater levels of information sharing between parties and a drive to search for alternative outcomes that might benefit all parties (Rahim, 2002).

Because this more open approach to conflict management aims to build a consensus and compromise, parties are more likely to have positive feelings about the conflict and its resolution. If both parties feel that their concerns are being heard and recognized, they are also more likely to feel the positive affective and attitudinal outcomes that are associated with satisfaction. The focus is not combative or adversarial (Kuhn et al., 2000) and parties are more likely to feel that their concerns have been met. Integrative conflict management also builds satisfaction by using more of the conflict resolution techniques that parties want to use. Prior research has shown that employees prefer to use active listening, mentoring and coaching, role-playing and informal problem solving rather than conventional arbitration and grievance processes (Pruitt, 1983). By feeling more positive about other participants and their goals, and by using techniques that participants feel better using, integrative conflict management techniques build satisfaction with the conflict resolution process. This argument leads to our main hypothesis:

H1: An integrative conflict resolution strategy among IS team members will lead to satisfactory conflict resolution during IS implementation process.

Integrative Conflict Management and Mutual Support

Integrative Conflict Management encourages an openness between conflicted parties (Conbere, 2001). Participants in the integrative conflict management process are encouraged to approach the resolution process with an open attitude. As part of this process, integrative conflict management works to address the sources of conflict (Lynch,

2001) as well as the visible signs and displays of conflict (Jehn et al., 2001; Jehn, 1997). As a result, all parties are better able to identify the sources and results of the conflict. Identifying these sources helps participants in the process to avoid these problems in the future, thereby avoiding conflict activity itself.

At the individual project level, coordination is important because shared scarce resources must be available when they are required. However at the program level, mutual support supersedes coordination in order to realize the positive outcomes of productive group relationships (Parolia et al., 2011, 2013).

Because participants can better understand both the sources and the symptoms of conflict in both themselves and other participants, there is a stronger sense that conflict resolution participants can build a mutual understanding of each other's requirements. In contrast to distributive conflict management processes that typically lead to mutual exclusion (Kuhn et al., 2000), integrative conflict management works towards a mutual support of each partner in the process (Li et al., 2012). This mutual understanding of each other's requirements produces mutual support between participants. This argument leads to our second hypothesis:

H2a: An integrative conflict resolution strategy among IS team members will lead to mutual support among team members during IS implementation process.

Integrative Conflict Management and Cooperation

Prior research has shown that unresolved or poorly managed conflict results in poorer cooperation between parties. Conflict resolution mechanisms built on opposition or confrontation compel participants to seek for their own benefit at the expense of the other party in order to strengthen their position amid scarce resources (Kuhn et al., 2000). Competition for potentially scarce resources produces adversarial relationships between parties, leading to reduced coordination behaviors (Pesämaa et al., 2009). Because these parties do not wish to work together to resolve conflict, or if each party feels that scarce resources will be distributed unfairly among participants, they are more likely to avoid working together (Kumar and van Dissel, 1996).

Under the integrative conflict management approach, participants are encouraged to share their ideas and concerns through a variety of resolution techniques (Conbere, 2001; Lynch, 2001). By encouraging parties to share their perspectives and views, each party builds a better understanding and knowledge of the other party's goals and requirements. The integrative conflict management approach itself hence improves cooperation between parties by improving what is known between parties, thereby building a consensus of what should be done in future (Parolia et al., 2011). Because parties are encouraged to work together to bring about useful outcomes, they are more likely to cooperate with each other in order to achieve high "joint benefit" (Carnevale et al., 1986). This argument leads to our third hypothesis:

H2b: An integrative conflict resolution strategy among IS team members will lead to cooperation among team members during IS implementation process.

METHODOLOGY

In order to understand the conflict effects among projects, we required a context in which this conflict behavior would be present. Accordingly, we chose enterprise system implementations as the context of our study: while enterprise systems are a popular information system type among firms (Ko et al., 2005; Liang et al., 2007), their implementations are characterized by high rates of failure, uncertainty and conflict (Nah et al., 2001; Al-Mashari et al., 2003; Allen, 2005). Most enterprise system implementations also depend heavily on the joint work of developmental teams (Robey et al., 2002). We hence felt that this would be a suitable context for our study.

We sought a research method that would allow us to gather a large number of variables from a range of firms at different locations (Dillman et al., 2008). These variables related to ongoing processes at the firms, and hence archival data sources were not appropriate. To satisfy these requirements, we selected a questionnaire survey to collect data. This method has been used successfully in a range of prior project management and IS research literature (Pinsonneault and Kraemer, 1993) and accordingly we felt it would be appropriate for this work.

We selected a sample of the top 1000 firms in Taiwan. We drew our sample from a list published by China Credit Information Service, Ltd. This database, which has been well used in prior literature, yielded company, ownership,

and contact details for our sample. Sample members had to have begun implementing an enterprise system development program, and had to have implemented at least two projects within the program. For each firm, we sought three key informants as respondents to the survey, furnished to us by a lead contact at the firm (such as the CIO). Firms that agreed to participate were sent three questionnaires by postal mail. We followed the advice of Dillman (2008) in designing the instrument, including testing and validating items (Helgeson et al., 2002). The survey instruments were written in Chinese and translated and checked by three experts with extensive research experience. The instrument is available from the corresponding author. Excluding incomplete responses and those that did not conform to the study requirements, we had 183 usable responses.

DATA ANALYSIS AND RESULTS

Structural equation modeling (SEM) was used to build and assess the measurement and structural models (Anderson and Gerbing, 1988). One factor testing was used to detect potential common method variance. In the unrotated factor structure, the first factor failed to comprise a majority of the variance from the constructs. The possibility for common method variance was hence deemed to be low.

A Confirmatory Factor Analysis (CFA) of the six constructs was then conducted in IBM AMOS 20.0 to test convergent and discriminant validity. Estimation of the CFA with six constructs resulted in a good fit statistic (X^2 = 180.83; df = 104; X^2/df = 1.73; NFI = 0.935; CFI = 0.971; AGFI = 0.846; RMSEA = 0.064). All factor loadings were above the recommended 0.5 and were significant (see Table 3).

Convergent validity was assessed by calculating composite reliability and average variance extracted (AVE). Composite reliability values exceeded the 0.7 threshold (Hair et al., 1995), which indicated adequate internal consistent among the respective constructs. AVE, the ratio of the sum of the variance captured by the construct and measurement variance, was applied as the measure for convergent validity (Bagozzi and Yi, 1988). Composite reliability values exceeded the recommended 0.7 threshold, and the AVE for each construct exceeded the recommended 0.5 level. These findings indicated good convergent validity.

Table 3 Constructs, Items and Item Loadings

Construct	Measurement Item	Loading	CR	AVE
Conflict Resolution Satisfaction	SCR1_PM	0.954***	0.928	0.811
	SCR2_PM	0.849***		
	SCR3_PM	0.895***		
Mutual Support	MSUPP1	0.840***	0.883	0.716
	MSUPP2	0.885***		
	MSUPP3	0.812***		
Cooperation	COOP2	0.929***	0.928	0.866
	COOP3	0.932***		
Program Effectiveness	EFFECT1	0.944***	0.953	0.872
	EFFECT2	0.919***		
	EFFECT4	0.938***		
Trust	TRUST1	0.950***	0.931	0.817
	TRUST2	0.890***		
	TRUST4	0.870***		
Integrative Conflict Management	ICM1_PM	0.669***	0.830	0.622
	ICM3_PM	0.906***		
	ICM4_PM	0.774***		

This study used the estimated correlation between all constructs pairs and the shared AVE squared root of each construct as criteria to demonstrate discriminant validity. The AVE square root of each construct should be greater than its correlation with the other constructs (Fornell and Larcker, 1981). The results of this testing, provided in Table 2, show that the AVE square root of each construct is greater than its correlation with the other constructs. This evidence suggests good discriminant validity.

Table 4 Square Root Average Variance Extracted

	Conflict Resolution Satisfaction	Mutual Support	Cooperation	Program Effectiveness	Trust	Conflict Management
Conflict Resolution Satisfaction	**0.900**					
Mutual Support	0.219	**0.846**				
Cooperation	0.285	0.408	**0.930**			
Program Effectiveness	0.586	0.359	0.340	**0.933**		
Trust	0.188	0.355	0.820	0.247	**0.903**	
Conflict Management	0.665	0.293	0.293	0.537	0.171	**0.788**

Boldface numbers on the leading diagonal are the square root of the variance shared between constructs. Off diagonal elements are the correlations among constructs.

SEM analysis with maximum likelihood estimation was used to test the hypothesized paths. Estimation of the structural model with six constructs resulted in good model fit statistics (X^2= 242.41; df = 111; X^2/df= 2.184; NFI = 0.913; CFI = 0.950; AGFI = 0.820; RMSEA = 0.081). The significance of the structural coefficients, depicted in Figure 2, provides additional evidence in support of the research model. Estimated R^2 for the five dependent variables were, 45% for Conflict Resolution Satisfaction, 37% for Trust, 19% for Mutual Support, 70% for Cooperation and 17% for Program Effectiveness. Hypothesis 1, that Integrative Conflict Management positively affected Conflict Resolution Satisfaction, was accepted (β= 0.67, $p < 0.001$). Hypothesis 2a, that Integrative Conflict Management positively affected Mutual Support, was accepted (β= 0.26, $p < 0.1$). Hypothesis 2b that Integrative Conflict Management positively affected Cooperation, was not accepted (β= 0.14, NS).

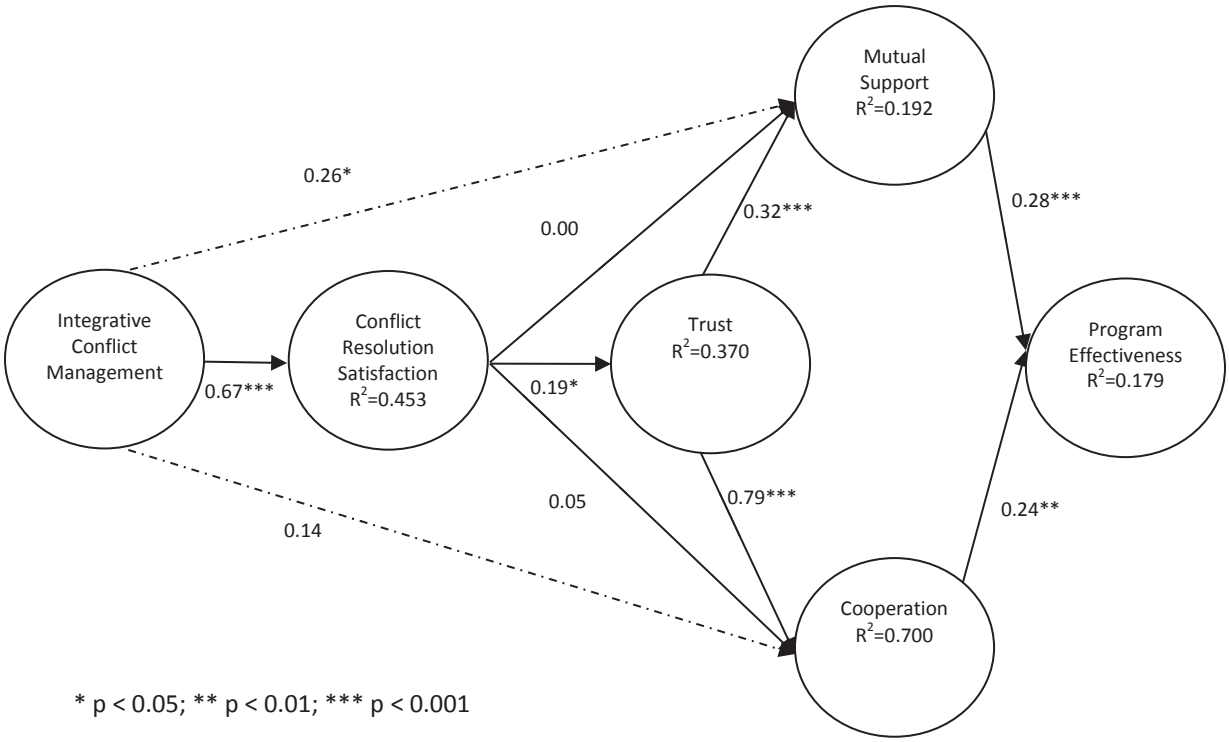

Figure 3 Structural Model of Integrative Conflict Management

DISCUSSION AND CONCLUSIONS

Prior IS literature has observed that a 'problem-solving' conflict management style is an effective mechanism to tackle ISD intra-project team conflict (Barki et al., 2001). It proposed that conflict resolution satisfaction fully mediates the relationship between conflict and final implementation outcomes. Unfortunately, this theoretical argument has not been validated in extant empirical evidence (Barki et al., 2001). Based on controversy conflict theory (Deutsch et al., 2011; Johnson, 2008), Jiang et al. (2013) reaffirmed that integrative conflict management, a conflict resolution method focusing on collaboration in consideration of all parties, is effective in resolving conflict in the multi-project context. Controversy conflict theory begins with the existence of a strong goal among members (Johnson, Johnson, and Tjosvold, 2000). Jiang, et al. (2013) suggested that integrative conflict management will lead to a consensus decision on delivery and the required level of commitment toward completing the mutually-shared, overall multi-project goals. This prior work pointed to the importance of integrative conflict management for resolving conflict under the multi-project context: our aim in this paper was to test these relationships empirically. Using controversy conflict theory as a basis, we modeled the effect of conflict resolution satisfaction on project outcomes, through trust, mutual support and cooperation. We tested this model on 183 large enterprise implementation projects by way of a survey.

Our results supported our main theory that integrative conflict management led to conflict resolution satisfaction. Integrative conflict management was also significantly related to mutual support among teams. While our initial results did not confirm a positive relationship between integrative conflict management and cooperation, additional post-hoc testing revealed a positive relationship once non-significant paths had been removed from the model.

Practically, our results suggest that involving conflicted participants ought to lead to better outcomes than merely resolving the incident of conflict itself. While prior work has emphasized that resolving conflict is important, our results now show that an approach based on including and involving participants in the resolution process will lead to better mutual support and cooperation. Our findings emphasize that an integrated approach will be beneficial in the multi-project environment, where separate teams must work together in the face of limited resource availability.

Our study may be open to two limitations. First, our study explored implementation of large-scale enterprise systems. We chose this research context in order to understand the conflicts that often characterize such

implementation projects. However, implementation projects for other system types may exhibit different conflict behaviors and outcomes. Second, our study was conducted on large firms in Taiwan. Companies of other sizes or located in other regions may feature different project types and practices.

Several areas for further research extend from this study. First, better conflict management ought to result in fewer conflict episodes and superior resolution. Because conflict can produce negative effects on teams and their interrelationships, it would be useful to see whether firms employing integrated conflict management tools are able to undertake more projects than firms that do not, or whether they are able to employ fewer resources to match the same level of overall project output. Benefits of this nature ought to be visible at the portfolio investment level. Second, because many firms employ third party consultants in their enterprise system implementations, it would be interesting to see whether these integrative conflict management tools are also effective in bridging the conflict divide with these external parties and whether their use in that context also translates to the positive project outcomes observed in this study. The effectiveness of these techniques on virtual teams, characterized by significant geographical distance and thinner social interrelationships, also warrants further analysis. Third, our model improves understanding of how conflict can be managed in the multi-project setting. Our theory basis of controversy conflict theory illustrates that some conflict types can be useful in these environments. It would be useful to develop an understanding of the signs and symptoms of this 'beneficial' conflict so that it can be more effectively marshaled in the firm, and distinguished from more destructive and unproductive conflict types.

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